REMARKS

Claims 1-49 and 51-66 are pending in the application.

The withdrawal of the prior rejections over Visco (US 2005/0100792) is gratefully acknowledged.

Claim rejections under 35 U.S.C. §102

Claims 1, 3, 9, 21, 44, 50, 53 and 55 were rejected under 35 U.S.C. §102(b) as being anticipated by JP 55-081471 A (JP '471).

The claims have been amended in hopes of expediting prosecution of certain aspects of the present invention. In particular, independent claim 1 has been amended to recite that the first material component comprises a composite reaction product of lithium with a material selected from the group consisting of a metal nitride, red phosphorus and a metal halide; and the second material component in contact with the first material component is selected from the group consisting of ceramic active metal ion conductors and glass-ceramic active metal ion conductors. Since JP '471 provides no teaching of these first and second material components, it is respectfully submitted that amended claim 1, and its dependents, are unanticipated by JP '471, and withdrawal of the rejection under 35 U.S.C. §102(b) is respectfully requested.

In accordance with and in addition to the amendments to claim 1, claim 50 has been canceled and adjustment of dependencies and clarifications have been made in claims 51-57.

Claim rejections under 35 U.S.C. §103

All other claims were rejected under 35 U.S.C. 103(a) as being unpatentable over JP '471 in combination with various secondary references (specifically: claim 51 was rejected under 35 U.S.C. 103(a) as being unpatentable over JP '471 as applied to claim 1, and further in view of US Patent No. 5,314,765 to Bates; claims 2, 8, 11, 12 and 45 were rejected under 35 U.S.C. 103(a) as being unpatentable over JP '471 as applied to claim 1, and further in view of US Patent No. 3,976,509 to Tsai; claims 48-50, 54 and 56-63 were rejected under 35 U.S.C. 103(a) as being unpatentable over JP '471 in view of Bates as applied to claim 12, and further in view of US Patent No. 6,485,622 to Fu; claims 10, 15-20, 23, 52 and 54 were rejected under 35 U.S.C. 103(a) as being unpatentable over JP '471 in view of US Patent No. 3,607,417 to McRae). It is respectfully submitted that the various secondary references cited do not cure the deficiencies of JP '471 noted above with regard to these claims, given the amendments to claim 1 from which the claims all depend. Accordingly, all

pending claims are submitted to be patentable for at least the reasons put forth with regard to clam 1, and withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

General Notes

There are also submitted to be other independent bases for the patentability for the pending claims. For example, regardless of the present amendment to claim 1, it is respectfully submitted that, generally speaking, the subject matter claimed in the application is patentable over the art of record. To the extent that the argument is made that the claimed invention is obvious in view of combinations of references that purport to teach a lithium-water battery (e.g., JP '471, Tsai, McRae, etc.), it is noted that these prior efforts, dating back to the 1970's and 1980's have failed to produce a substantial, commercially viable lithium-water cell. As noted in the background section of the present application:

> Prior attempts to use lithium anodes in aqueous environments relied either on the use of very basic conditions such as use of concentrated aqueous KOH to slow down the corrosion of the Li electrode, or on the use of polymeric coatings on the Li electrode to impede the diffusion of water to the Li electrode surface; in all cases however, there was substantial reaction of the alkali metal electrode with water. In this regard, the prior art teaches that the use of a aqueous cathodes or electrolytes with Li-metal anodes is not possible since the breakdown voltage for water is about 1.2 V and a Li/water cell can have a voltage of about 3.0 V. Direct contact between lithium metal and aqueous solutions results in violent parasitic chemical reaction and corrosion of the lithium electrode for no useful purpose. Thus, the focus of research in the lithium metal battery field has been squarely on the development of effective non-aqueous (mostly organic) electrolyte systems.

With regard to Fu, it is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to use the Fu material in a battery cell as described and claimed in the present application. Fu, with reference to Fig. 1, describes a battery cell with a glass-ceramic lithium ion conductor disposed between a lithium anode and generic cathode. There is no teaching or suggestion therein that the cathode comprises an aqueous component. And there is no teaching or suggestion of a layer of material intermediate between the lithium anode and the glass-ceramic. So, even if Fu were to be combined with the teachings of JP '471 and/or Bates, which it is not admitted one of ordinary skill would be inclined to do, the claimed protective layer structure comprising first and second components is not taught or suggested by the combination.

The present invention provides a lithium-water (or, more generally, and active metal-aqueous) battery cell that does not rely these expedients and is thus susceptible to broader, more substantial application with a demonstrated high level of performance. It is respectfully submitted that, given the experience reported in the literature relating to this field prior to Applicants' invention, one of ordinary skill in the art would have been convinced that a functional cell with the exceptional performance characteristics found and reported in the present application would not have been possible by a combination of the teaching of the prior art and using the construction disclosed and claimed the present application. Applicants' invention enables a new class of battery cells and other electrochemical devices, the achievement of which would not have been believed possible by those skilled in the art prior to Applicants' invention. Accordingly, in addition to the aspects of the present invention to which the present prosecution has been focused, Applicants' assert broader patentability in other aspects of the invention to be presented in additional continuation of divisional applications.

Double Patenting

Claims 1, 3, 44, 49-53, 56 and 57 were provisionally rejected on the ground of obviousness-type double patenting over claims of commonly assigned co-pending application 10/825,587of Visco et al. (Visco '587). This rejection is respectfully traversed.

The claims presently pending in Visco '587 recite, in relevant part, "a renewable active metal anode, configured for supplementation of the active metal..." [emphasis added]. The claims pending in the present application recite battery and other electrochemical cells having active metal anodes. The pending claims lack any teaching or suggestion of the renewable active metal anode configured for supplementation of the active metal recited in Visco '587. Accordingly, it is respectfully submitted that the presently pending claims are not rendered obvious by the noted claims of Visco '587, and withdrawal of the obviousness-type double patenting rejection on this basis is respectfully requested.

While not presently believed to be the case, should it be ultimately necessary, Applicants propose to file Terminal Disclaimers in one or both of these applications, as appropriate, in order to obviate any remaining obviousness-type double patenting issues prior to the conclusion of prosecution.

Conclusion

Applicants believe that all pending claims, including previously withdrawn claims that depend from or otherwise require all the limitations of an allowable generic claim, are allowable and

respectfully request a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application the undersigned can be reached at the telephone number set out below. If any additional fees are due in connection with the filing of this amendment, the Commissioner is authorized to charge such fees to Deposit Account 504480 (Order No. PLUSP036).

Respectfully submitted,
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